

B. Claims

The following is a complete listing of the claims, and replaces all earlier versions and listings.

1. (Original) A structure containing polyhydroxyalkanoate and a magnetic substance, comprising:

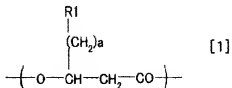
an external phase part containing the polyhydroxyalkanoate; and

an internal phase part contained in the external phase part,

at least one of the external phase part and the internal phase part containing the magnetic substance.

2. (Original) A structure according to claim 1, wherein the structure is in the form of a microcapsule where the external phase part forms a shell and the internal phase part forms a core.

3. (Original) A structure according to claim 1, wherein the polyhydroxyalkanoate comprises polyhydroxyalkanoate including at least one selected from the group consisting of monomer units represented by the following formulae [1] to [10]:



(wherein the monomer unit is at least one selected from the group consisting of monomer units having the following respective combinations of R1 and a in the formula:

a monomer unit where R1 represents a hydrogen atom (H) and a represents one of

the integers from 0 to 10;

a monomer unit where R1 represents a halogen atom and a represents one of the integers from 1 to 10;

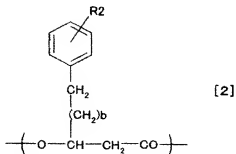
a monomer unit where R1 represents a chromophore and a represents one of the integers from 1 to 10;

a monomer unit where R1 represents a carboxyl group or a salt thereof and a represents one of the integers from 1 to 10;

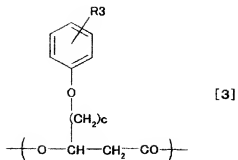
a monomer unit where R1 represents



and a represents one of the integers from 1 to 7);

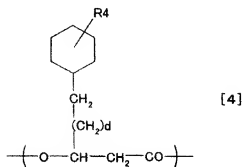


(wherein b represents one of the integers from 0 to 7, and R2 represents one selected from the group consisting of a hydrogen atom (H), a halogen atom, -CN, NO₂, -CF₃, -C₂F₅, and -C₃F₇);



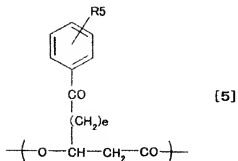
(wherein c represents one of the integers from 1 to 8, and R3 represents one selected from the group consisting of a hydrogen atom (H), a halogen atom,

-CN, -NO₂, -CF₃, -C₂F₅, and -C₃F₇);

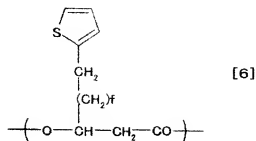


(wherein d represents one of the integers from 1 to 7, and R4 represents one selected from the group consisting of a hydrogen atom (H), a halogen atom, -CN, -NO₂, -CF₃,

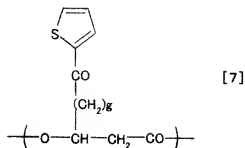
-C₂F₅, and -C₃F₇);



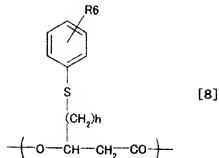
(wherein e represents one of the integers from 1 to 8, and R5 represents one selected from the group consisting of a hydrogen atom (H), a halogen atom, -CN, -NO₂, -CF₃, -C₂F₅, -C₃F₇, -CH₃, -C₂H₅, and -C₃H₇);



(wherein f represents one of the integers from 0 to 7);

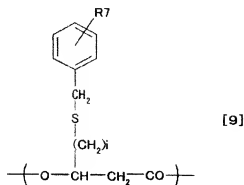


(wherein g represents one of the integers from 1 to 8);

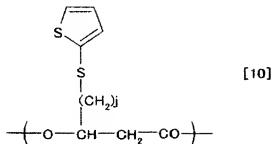


(wherein h represents one of the integers from 1 to 7, and R6 represents one selected from the group consisting of a hydrogen atom (H), a halogen atom, -CN, -NO₂,

-COOR', -SO₂R'', -CH₃, -C₂H₅, -C₃H₇, -CH(CH₃)₂, and -C(CH₃)₃, where R' represents one of a hydrogen atom (H), Na, K, -CH₃, and -C₂H₅ and R'' represents one of -OH, -ONa, -OK, a halogen atom, -OCH₃, and -OC₂H₅);



(wherein i represents one of the integers from 1 to 7, and R7 represents one selected from the group consisting of a hydrogen atom (H), a halogen atom, -CN, -NO₂, -COOR', and -SO₂R'', where R' represents one of a hydrogen atom (H), Na, K, -CH₃, and -C₂H₅ and R'' represents one of -OH, -ONa, -OK, a halogen atom, -OCH₃, and -OC₂H₅); and



(wherein j represents one of the integers from 1 to 9).

4. (Original) A structure according to claim 1, wherein the polyhydroxyalkanoate has a number average molecular weight of 5,000 to 1,000,000.

5. (Original) A structure according to claim 1, wherein a monomer unit composition of the polyhydroxyalkanoate varies in a direction from the inside toward the outside of the structure.

6. (Original) A structure according to claim 1, wherein at least a portion of the polyhydroxyalkanoate comprises a chemically modified polyhydroxyalkanoate.

7. (Withdrawn) A manufacturing method for a structure having an external phase part containing polyhydroxyalkanoate and an internal phase part contained in the external phase part with at least one of the external phase part and the internal phase part containing a magnetic substance, comprising the steps of:

preparing a liquid raw material including an oil phase containing polyhydroxyalkanoate and an organic solvent, a water phase, and the magnetic substance; and removing at least one of the organic solvent and the water from the liquid raw material,

the inner phase part being contained in the external phase part including PHA derived from the oil phase or the water phase, and

at least one of the external phase part and the internal phase part containing the magnetic substance.

8. (Withdrawn) A manufacturing method for a structure according to claim 7, further comprising the step of preparing an emulsion using the water phase and the oil phase.

9. (Withdrawn) A manufacturing method for a structure according to claim 8, further comprising the steps of:

preparing a W/O type emulsion by dispersing the water phase in the oil phase; and

removing at least one of the organic solvent and the water from the W/O type emulsion.

10. (Withdrawn) A manufacturing method for a structure according to claim 8, further comprising the steps of:

preparing a W/O type emulsion by dispersing the water phase in the oil phase;

preparing a W/O/W type emulsion by dispersing the W/O type emulsion in a second water phase; and

removing at least one of the organic solvent and the water from the W/O/W type emulsion.

11. (Withdrawn) A manufacturing method for a structure according to claim 8, further comprising the steps of:

preparing an O/W type emulsion by dispersing the oil phase in the water phase;

and

removing at least one of the organic solvent and the water from the O/W type emulsion.

12. (Withdrawn) A manufacturing method for a structure according to claim 7, wherein the removal of at least one of the organic solvent and the water is performed by at least one method selected from the group consisting of a submerged drying method, a phase

separation method, and a spray drying method.

13. (Withdrawn) A manufacturing method for a structure having an external phase part containing polyhydroxyalkanoate and an internal phase part contained in the external phase part, at least one of the external phase part and the internal phase part containing a magnetic substance, comprising the steps of:

preparing a water phase containing a polyhydroxyalkanoate synthetic enzyme and a 3-hydroxyacyl coenzyme A;

preparing an oil phase containing an organic solvent;

preparing an emulsion containing the water phase, the oil phase, and the magnetic substance;

synthesizing polyhydroxyalkanoate by polymerizing the 3-hydroxyacyl coenzyme A with the polyhydroxyalkanoate synthetic enzyme in the emulsion; and

removing at least one of the organic solvent and the water from the emulsion, the inner phase part being contained in the external phase part including PHA derived from the oil phase or the water phase, and

at least one of the external phase part and the internal phase part containing the magnetic substance.

14. (Withdrawn) A manufacturing method for a structure according to claim 13, further comprising the steps of:

preparing a W/O type emulsion by dispersing the water phase in the oil phase; and

removing at least one of the organic solvent and the water from the W/O type

emulsion.

15. (Withdrawn) A manufacturing method for a structure according to claim 13, comprising the steps of:

preparing a W/O type emulsion by dispersing a first water phase in the oil phase;

preparing a W/O/W type emulsion by further dispersing the W/O type emulsion in a second water phase; and

removing at least one of the organic solvent and the water from the W/O/W type emulsion.

16. (Withdrawn) A manufacturing method for a structure according to claim 15, wherein at least one of the first water phase and the second water phase contains a polyhydroxyalkanoate synthetic enzyme and a 3-hydroxyacyl coenzyme A.

17. (Withdrawn) A manufacturing method for a structure according to claim 13, further comprising the steps of:

preparing an O/W type emulsion by dispersing the oil phase in the water phase;

and

removing at least one of the organic solvent and the water from the O/W type emulsion.

18. (Withdrawn) A manufacturing method for a structure according to claim 13, comprising the steps of:

preparing an O/W type emulsion by dispersing a first oil phase in the water phase;
preparing an O/W/O type emulsion by further dispersing the O/W type emulsion
in a second oil phase; and
removing at least one of the organic solvent and the water from the O/W/O type
emulsion.

19. (Withdrawn) A manufacturing method for a structure according to claim 14, wherein a composition of a 3-hydroxyalkanoate unit in the polyhydroxyalkanoate varies in a direction from the inside to the outside of the structure by changing a composition of the 3-hydroxyacyl coenzyme A with time.

20. (Original) A structure according to claim 1, wherein the internal phase contains a pharmaceutical component.